Green Schools News

EmPOWERing Maine Students to Know Their SOURCE

Winter 2003

Volume 3, Issue 2

The Holden School Energy Patrol members green their school and save a bundle of another kind of "green."

Making a Difference: The Holden School Energy Patrol

By Adriana Pellegrini and Jennifer Hannigan, 4th Grade Holden Students

One of the coolest things we fourth graders do at Holden Elementary School is the Energy Patrol. What is an Energy patrol, you ask? Well, sit back and we will tell you all about it….

Last year, our teacher, Mrs. Young, read about the Energy Patrol program in the *Green School News*. We loved the idea and couldn't wait to do an Energy Patrol.

Before we could get started, we needed to be trained. In September, Peter and Maggie from MEEP came to talk to our two fourth grade classes. They told us that the point of the Energy Patrol was to conserve energy at our school. We learned that when we conserve energy, we help reduce global warming.

(…Continued on page 2)

Could Your School Save $$$ With an Energy Audit?

Auditor Kris Anderson Explains The Obvious

By Peter Zack

When Kris Anderson launches an energy audit, he puts his senses to work. "I look for the obvious," he says. Anderson, of KG Anderson in Phippsburg, Maine, conducts audits for the Maine Green Schools Program. "I look for things like air leaks, malfunctioning equipment and what I like to call 'unreliable human interaction,' meaning stuff running when it doesn't need to be," he explains.

(…Continued on page 2)

Green Schools News is a publication of:

Maine Energy Education Program (MEEP) and the Maine Department of Environmental Protection, Air Bureau (MDEP)

For more information, please contact:

Peter Zack
P.O. Box 728
Parsonsfield, ME 04047
207-625-7833
meep@psouth.net

What Can The Green Schools Program Do For You?

- Encourage Interdisciplinary Learning and Environmental Awareness
- Foster better communication between students, teachers, custodians and administrators
- Help your school save electricity, which results in more money for books and supplies for your classroom

IN THIS ISSUE…..

(Energy Patrol cont…)

Global warming hurts animals and habitats in the Arctic and Antarctic.

We learned that energy comes from a lot of natural resources like coal, oil and natural gas. These energy sources are non-renewable, which means once we use them up, they are gone. We also found out how expensive electricity can be. Just keeping your lights on all day can waste a lot of money and natural resources.

Holden students on patrol!

After we learned about energy conservation, we went to every classroom in our school and told them about the Energy Patrol. We also had a whole school assembly to explain how important the Energy Patrol really is! After our day of training with Peter and Maggie, we knew that we wanted to help conserve energy and were ready to get to work!

Eight of us were trained as the first Energy Patrol in October. In pairs, we were assigned a grade level. When our grades are at lunch, we are on duty! We always wear our Energy Patrol shirts so that teachers know who we are.

First, we record the temperature and weather that day. Then we go around to our assigned classrooms. We check if their lights and computer monitors are off. If they are, they get a "thanks" sticker on the Energy Patrol calendar by their door. If the class forgets to turn something electrical off, they get an "oops" sticker that reminds them to be more careful the next day.

A "thanks" sticker

On Friday afternoons, we tally up all the "thanks" stickers each classroom gets. The class with the most "thanks" stickers gets their name posted on the office bulletin board and gets to keep the Energy Patrol polar bear puppet in their room for the week. Everyone LOVES that polar bear! If we have a tie, we draw a name from a hat. We have already had a lot of weeks when every class had all five "thanks" stickers! At the end of the school day, we also shut off the computers in the lab and make sure all outside doors are closed (sometimes kids forget to shut them when they go out to recess and we could waste a lot of energy that way!) On the last day of the month, eight new members are chosen for the Energy Patrol.

After the first month of Energy Patrol we were wondering if we were making a difference. We knew that more classrooms were getting a lot more "thanks" stickers and a lot less "oops" stickers, which was great! But we were really excited when we saw our school's electricity bill and compared it to the previous one. This year's October electricity bill showed that we used about 650 fewer KWh than we did in October of last year. That means that our Energy Patrol helped to save our school about $400 this October compared to last October! November and December were similar. We saved about $400 in each of those months as well!

We couldn't believe it at first and neither could our principal and superintendent. We plan to continue to track how much electricity we are saving and to share this news with our school board.

You see, Energy Patrols are both fun and useful. We enjoy doing our Energy Patrol, and we know that it is helping to make our school and our world a better place. If more schools did Energy Patrols, we could save LOTS of energy! Why not give it a try?

(Energy Audit cont…)

MEEP is ready to share Kris Anderson's expertise on a cost-sharing basis to schools with ongoing Energy Patrols. A typical school energy audit costs between $600 to $700, depending on size. That may seem like a lot at first, but the opportunities for savings from an energy audit are substantial. Schools across the nation spend between $6 billion and $7 billion a year for energy. The nonprofit organization The Alliance to Save Energy, which helped MEEP launch its Green Schools initiative in 1999, estimates that about one quarter of the energy consumed in an average school is wasted. That's a lot of money down the drain, not to mention the unnecessary environmental impacts caused by wasting so much energy.

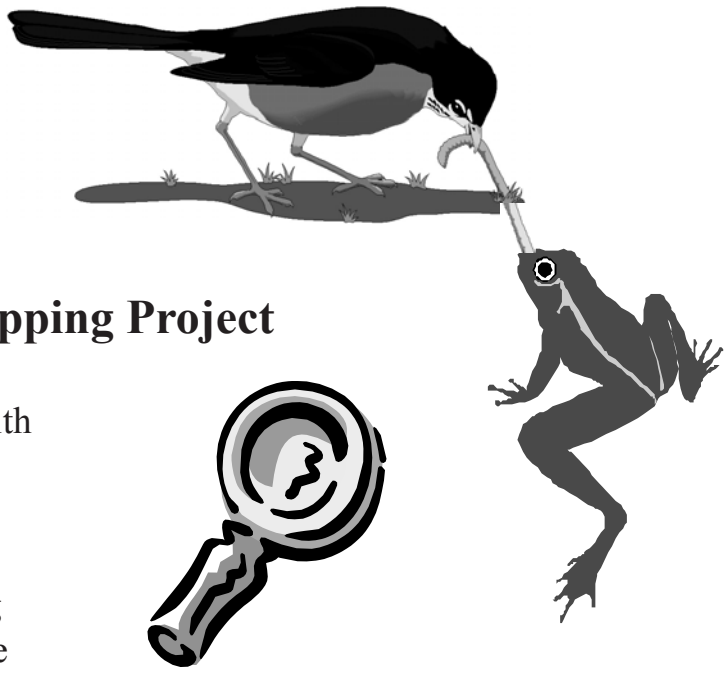
Anderson says that many energy black holes can be fixed with low or no cost solutions. He tells us that clogged filters and improperly set controls are frequent causes of energy waste in schools. Lights and computer monitors needlessly left on may also be draining energy bucks from schools, although Anderson mentions that Energy Patrols are often effective at preventing these kinds of "non-reliable human interactions."

Auditor Kris Anderson

Indoor air quality is a great concern for many Maine schools. As a member of Maine's Indoor Air Quality Council, Anderson is cognizant of the relationship between energy use and indoor air quality. "A school," he explains, "is a large operating body with numerous interrelated systems. Taking measures to reduce energy waste need not be at the expense of adequate ventilation, if the relationship between the two is understood and respected."

Schools interested in "looking for the obvious" with help from Kris Anderson should contact MEEP at 207-625-7833.

Earth Day 2003



Jeepers Peepers Spring Watch: Climate Change Detectives Mapping Project

Celebrate the return of spring to Maine with this fourth year of the Jeepers Peepers Spring Watch!

Maine students observe the "rite of spring passage" by tracking this year's emergence of robins, peepers, maple tree bud burst and dandelion blossoms. This year, the theme of the project is Global Climate Change. We'll try and detect if spring is coming earlier in Maine these days.

Students share their observations weekly and the data is plotted on maps that can be viewed on the Maine DEP's website. Participants will receive information and curriculum ideas about the four focus species and about Global Climate Change.

Students also track weather measurements such as snow depth, temperature, and lake ice-out. They can compare this year's observations on the web with those of the last three years.

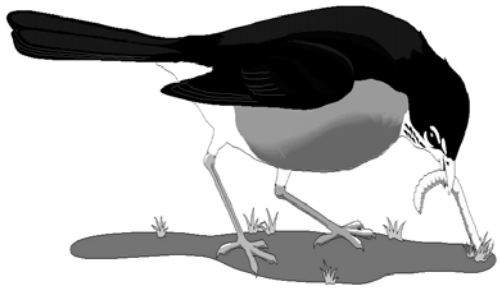
Teachers should register their classes in advance of the start of the project at : www.mainedep.com.

Don't stop with just tracking spring…

...**T**he second part of this project offers you a chance to explore the life history and habitats of these species and to learn more about climate change through activities provided to you on the web or in our **Climate Change information packets.**

You can get this EPA Toolkit for Teachers FREE! It comes with a CD-ROM, video, animal cards, and a Global Warming Wheel Card Activity Kit. Get more details on this and other cool activities when you sign up for the Jeepers Peepers Essay contest. Or, to order your free toolkit now, visit www.epa.gov/globalwarmingkids/index.html

Jeepers Peepers
Earth Day Essay Contest Guidelines



Imagine you've walked into a greenhouse. The heat and humidity of summer surround you even in winter. How does this happen in a glass house? Heat from the sun comes in through the glass and gets trapped, warming up the inside of the greenhouse. Did you know that the Earth's atmosphere acts kind of like a greenhouse? The atmosphere is made up of layers of air and gases. The air we breathe makes up the bottom layer of the atmosphere. Higher up in the atmosphere, gases like carbon dioxide, methane and water vapor trap heat from the sun, a lot like the panes of glass in a greenhouse. We call these gases ***greenhouse gases***. When sunlight passes through the atmosphere, some of the heat from the sun is trapped in this blanket of greenhouse gases. When these gases trap heat, it warms up the surface of the Earth. This process is known as the ***greenhouse effect***.

The greenhouse effect is normal and natural, and without it, the earth would be too cold. But, it's always possible to have too much of a good thing. Human activities produce a lot of greenhouse gases, and the gases we produce go right up to the atmosphere and start trapping heat. Many scientists believe that we are producing too many greenhouse gases and trapping so much heat that the earth is starting to warm up too much too fast. They think that this is beginning to change our climate. We call this ***global climate change***.

Grades 4-6 Question (200 words maximum)
Now its your turn to be the climate detective. What clues would you use to see whether or not the earth's climate is changing? What human activities do you think might be increasing the greenhouse effect? Today what kinds of things did you do that could have released greenhouse gases? What are some things you could do tomorrow to reduce your own greenhouse gases?

Grades 6-8 Question (400 words maximum)
Now it's your turn to be a climate scientist. Describe what evidence scientists have found that tell us if the climate is changing. Picture your favorite natural setting and describe what habitat changes might occur as the greenhouse effect increases. Finally, describe some specific actions that you and your family would be willing to do to slow down climate change?

Prizes
Winning essays in each category may be published on the DEP web site and/or in the weekly DEP newspaper column. Winners will also receive Jeepers Peepers! T-shirts and wildlife books for their classroom.

Judging
Essays will be judged by a panel of environmental experts from the state and judged on:

***creativity and original approach to the topic**

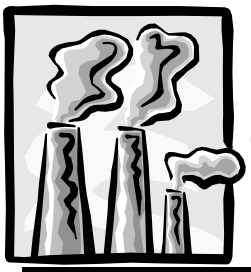
***scientific accuracy**

***clear writing including grammar, spelling and punctuation.**

We request that essays be typed if at all possible. Essays will be judged in three categories: 4th grade, 5th-6th and 6th-8th grades. Please include student name(s), grade, teacher, school, address and school phone number.

Entries Must Be Postmarked no later than:
Tuesday, March 25, 2003
Who May Enter?
Any 4th - 8th grade student (or student team) in Maine may submit an essay.
How to Enter
Please send entries by mail to:
Jeepers Peepers Essay Contest
Maine DEP Air Bureau
17 State House
Augusta, Maine 04333-0017

For for more information and background research, please visit our Jeepers Peepers website at: www.mainedep.com, search words "Jeepers Peepers."



It's a Gas!
Three Activites for Exploring Greenhouse Gases

Greenhouse gases are heat-trapping gases, like carbon dioxide and methane. Burning fossil fuels to generate energy produces too many greenhouse gases. This is causing **Global Climate Change** (see pages 5 and 6). Here are some simple activities that help explain greenhouse gases.

A Heavy Topic: Carbon Dioxide Has Weight

Concept: Carbon dioxide (CO2) has weight, and temperature and pressure have an effect on CO2.**Method:**

1. Heat 100 ml of water to 50 degrees Celsius in a 500 ml beaker.
2. Use a balance to find and record the masses of 2 unopened cans of chilled soda. (Note: wipe off any condensation on the outside of the can first.)
3. Open both cans. Have a discussion about what causes the familiar "psssst" sound when a can of soda is opened. (*Carbonated drinks are bottled under pressure, so the pressure in the can is higher than the pressure in the air outside the can. When the can is opened, the pressure inside the can drops until it is equal to the pressure outside. As the pressure drops, CO2, a gas, begins to come out of the liquid and escape from the can.)*
4. Wait 3 minutes to allow some of the gas to escape from the cans.
5. Place one of the cans in the warm water. After 10-12 minutes, remove the can from the water and dry it off. Also wipe any condensation from can 2.
6. Using thermometers, measure and record the temperature of each soda. Weigh both cans again and record their masses. Compare the mass before and after to determine the weight of the CO2 that has escaped from each can. Which can weighs more? Why?

Did You Know…..One kilowatt hour (kWh) of electricity produces about 1.1 pounds of CO2? According to Energy Federation, Inc., MEEP's light bulb supplier, a 20 watt compact fluorescent light bulb (equal to a 75 watt incandescent light bulb) saves 550 kWh over its lifetime. That means you prevent 605 pounds of carbon dioxide from being released into the atmosphere when you replace one incandescent with a compact fluorescent!

Earth in Your Hands: The Greenhouse Effect in a Jar

Concept: The Earth's atmosphere is like a greenhouse.

Method:

1. Using rubber bands, attach 2 pieces of cardboard to the top of 2 thermometers so that the numbers are facing out and use the cardboard to prop the thermometers up.
2. Place one thermometer inside a mayonnaise jar and put the lid on the jar.
3. Place the jar in a sunny window and put the other thermometer next to it (not in a jar). Make sure both are shaded from direct sunlight by the cardboard.
4. Record the temperatures of both thermometers every ten minutes for one hour.

Why does the thermometer in the jar show a higher temperature? *(The glass and lid trap heat from the sun inside the jar, so the air inside the jar gets warmer than the air outside the jar.)* How is the jar like the greenhouse gases in the Earth's atmosphere. How is it different?

Fizzy Logic: Carbon Dioxide and the Greenhouse Effect

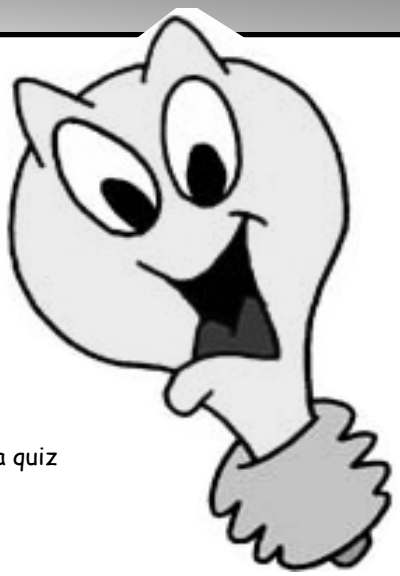
Concept: The warming effect of increased CO2 levels in the atmosphere.

Method:

1. Take 2 cans of soda. Open 1 can the night before the experiment and leave out overnight or until it is flat. Do not open the 2nd can until right before the experiment. Both cans should be at room temperature.
2. Cut the tops off 2 two-liter bottles. Use a ruler to mark a fill line about 3.5 inches up from the bottom on both bottles. Punch a small hole about 2 inches above the fill lines.
3. Fill one bottle to the fill line with fizzy soda and one to the fill line with flat soda. Let the bottles stand for 30-60 min. to let the CO2 fill the air in the bottle. Test for CO2 by lowering a lit match into the air in the bottle. If it goes out, there is enough CO2 to start.
5. Insert thermometers into the holes on the sides of the bottles so the ends are in the middle of the bottles.
6. Place the bottles under a 150 watt spotlight. Record the starting temperatures. Turn on the light and measure the temperature every min. for 10 min. What happens? Why?

Activities adapted from "Teaching About Climate Change: Cool Schools Tackle Global Warming," a publication of Green Teacher.

"Watts" on the Web?



- **http://www.state.me.us/dep/blwq/doceducation/jeepers/index.htm**

This is the Jeepers Peepers project website. This year's theme is Global Climate Change. (See Insert for more info.)

- **http://www.epa.gov/globalwarming kids/index.html**

The EPA's easy to navigate, easy to read site on global climate change. It's specifically for kids!

http://www.arm.gov/docs/education/warming.html

Professor Polar Bear explains global warming and its effects. Ask the scientist, take a quiz or find lesson plans related to global warming.

- **http://www.studyworksonline.com/cda/content/explorations/0,,NAV2-79_SEP605,00.shtml**

This climate change study guide site is great for high school students and teachers unfamiliar with the topic.

Getting Around Green: 2002's Transportation and Environment Workshops

By Maggie Donovan-Kaloust

Do you know what fuel produces an odor that smells like popcorn? Do you know what the most efficient vehicle ever built was, or how many miles per gallon the Honda Insight gets? The students and teachers who attended this year's Transportation and Environment workshops do.

Despite the November cold, they came from near and far to experience a variety of games and activities related to transportation and its effects on our environment. Participants learned about transportation history, transportation choices, alternative fuels and the effects of transportation on our air quality.

Among other things, they watched a fascinating power point presentation on transportation history, designed green cars and mapped their way around Portland using a variety of creative modes of transportation. They also played Transportation Jeopardy and the Global Energy Game, and even took a ride in a hybrid car!

The workshops are a collaboration between MEEP, the Maine DEP and Kids and Transportation of York and Cumberland Counties. The first of the two workshops was hosted by Maine Audubon in Falmouth and the second by the Owl's Head Transportation Museum.

Oh, and by the way, biodiesel is the fuel that smells like popcorn, the bicycle is the most efficient vehicle ever built and the Honda Insight, a hybrid gasoline-electric car, can get up to 70 miles per gallon.

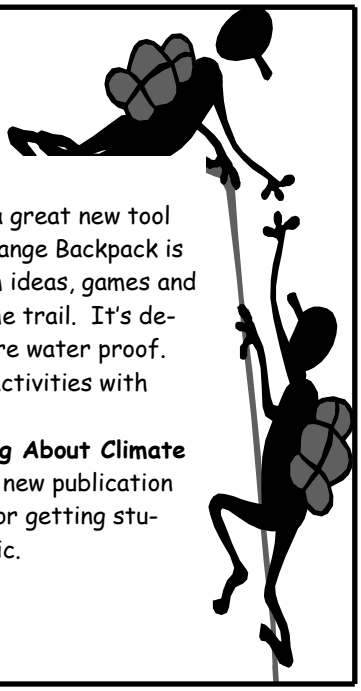
If the idea of fuel made from french fry grease has you hungering for more, MEEP can provide support and activities to help you bring the transportation and environment theme into your classroom. Call MEEP at 207-625-7833 for more information on how to get started.

Showing off Clean Green Machines at the Owl's Head Transportation & Environment Workshop

Quote of the season: "Never doubt that a small group of thoughtful, committed citizens can change the world; indeed it is the only thing that ever has." -Margaret Mead

A Climate Change Backpack

Borrow A Climate Change Backpack Today!



The Department of Environmental Protection has a great new tool for teaching about climate change. The Climate Change Backpack is literally a backpack filled with hands-on curriculum ideas, games and activities to use in the classroom and outside on the trail. It's designed to be portable, and most of the materials are water proof. We're even willing to come in and do a few of the activities with your class!

At your request, we can include a copy of "**Teaching About Climate Change: Cool Schools Tackle Global Warming,"** a new publication by Green Teacher. This book is a great resource for getting students involved in learning about this important topic.

To borrow a backpack or for more information, call:
Maggie Donovan-Kaloust at 207-287-4855 OR Peter Zack at 207-625-7833

Electrathon Maine Rolls Into It's Ninth Season

By Peter Zack

October 5, 2002:

The silence was deafening as eight single person electric vehicles, six with teenagers behind the wheel, accelerated from the starting line at Beech Ridge Motor Speedway in Scarborough, ME. This race was the inaugural event of the 2002-2003 season, the ninth consecutive year in which Maine high school teams have engaged in building and racing these so-called "Electrathon" cars.

The results of the two one-hour races were familiar. Competing in the Open Division to distinguish their efforts from those of their younger opponents, Portland area middleagers Michael Lewis and Fred Writt, a.k.a, "Team Electrolyte," racked up a combined 183 laps.

Mount Blue High School (Farmington, ME), perennially at or near the top of the high school standings, utilized the talents of principal driver Angela Ferrari (indeed, she's related) in the 09 car to accrue 168 laps.

Falmouth High school (ME), Mt. Blue's most formidable interscholastic rival in recent years, copped second in the High School Division under Ryan Cianchette's handling by advancing 159 laps. And Hillsboro-Deering (NH) High School, with Tony Booth at the wheel, managed 143 laps. Its third place finish was a best ever showing for Hillsboro-Deering, a newcomer to the Electrathon ranks.

In some late breaking news, MEEP has learned that Waldo County Technical Center's (Belfast, ME) Electrathon team has been declared national champion, ex post facto. Last June, the team traveled to Michigan to compete in the Electrathon national championships. Initially, the team left the competetion with a second place finish, but discovered once they arrived back in Maine that a mistake had been made, and they had actually won first place!

Interested in getting your school involved in the 2003 Electrathon? Give **MEEP** a call at: **207-625-7833**.

National Champions! Team members from left: Harold Duprey, Justin Palmer, Howard Fogg, Matt Furrow, technical center director Paul Cochrane, electrical instructor and team coach Herb Benecke, Keith Brown and Derek Larrabee. Not pictured: Jennifer Cook, Joshua Joy, Adam Bunker & Nick York.

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PO Box 728
Parsonsfield, ME
04047

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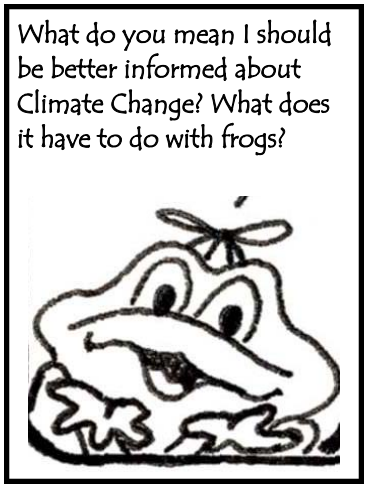
Check out MEEP's website at WWW.meepnews.org!



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